WHAT IS CLAIMED IS:

1. A content addressable memory cell comprising:

a first bit line for supplying a first bit;

a first storage element of a first phase change resistor for storing a first stored bit, connected in series with a first diode; said first storage element connected to said first bit line;

a second bit line for supplying a second bit, said second bit being an inverse of said first bit;

a second storage element of a second phase change resistor for storing a second stored bit, connected in series with a second diode; said second storage element connected to said second bit line; and

a match line connected to said first and second storage elements for indicating whether a match occurred between said first bit and said first stored bit, and between said second bit and said second stored bit.

2. The cell of claim 1 wherein each of said first and second phase change resistor is made of chalcogenide material.

3. The cell of claim 2 wherein each cell is capable of storing one of three possible states:

a first state representing a data bit of "1" wherein the first stored bit represents a bit "1" and the second stored bit represents a bit "0";

a second state representing a data bit of "0" wherein the first stored bit represents a bit "0" and the second stored bit represents a bit "1";

a third state representing a "don't care" state wherein the first stored bit represents a bit "0" and the second stored bit represents a bit "0".

4. The cell of claim 1 wherein said first diode connects said first phase change resistor to said match line; and

wherein said second diode connects said second phase change resistor to said match line.

5. The cell of claim 1 wherein said first diode connects said first phase change resistor to said first bit line; and

wherein said second diode connects said second phase change resistor to said second bit line.

6. An array of content addressable memory cells comprising:

a plurality of content addressable memory cells arranged in a plurality of rows and columns;

a plurality of pairs of bit lines arranged in columns; each pair of bit lines for supplying a first bit and a second bit with said second bit being an inverse of said first bit; a pair of bit lines being supplied to the cells arranged in the same column;

a plurality of match lines, wherein each match line is connected to the cells arranged in the same row; and

wherein each cell comprises:

a first storage element of a first phase change resistor for storing a first stored bit, connected in series with a first diode;

a second storage element of a second phase change resistor for storing a second stored bit, connected in series with a second diode;

wherein the first storage element is connected to an associated match line and to one of a pair of associated bit lines; and

wherein each of the second storage element is connected to said associated match line and to another of said pair of associated bit lines.

7. The cell of claim 6 wherein each of said first and second phase change resistors is made of chalcogenide material.

8. The cell of claim 7 wherein each cell is capable of storing one of three possible states:

a first state representing a data bit of "1" wherein the first stored bit represents a bit "1" and the second stored bit represents a bit "0";

a second state representing a data bit of "0" wherein the first stored bit represents a bit "0" and the second stored bit represents a bit "1";

a third state representing a "don't care" state wherein the first stored bit represents a bit "0" and the second stored bit represents a bit "0".

9. The array of claim 6 wherein said first diode connects said first phase change resistor to an associated match line; and

wherein said second diode connects said second phase change resistor to said associated match line.

10. The array of claim 6 wherein said first diode connects said first phase change resistor to one of a pair of associated bit lines; and

wherein said second diode connects said second phase change resistor to another of said pair of associated bit lines.